component of both BPH and prostate cancer tissue, it demonstrated weak cytoplasmic expression in both normal and neoplastic epithelial cells. The authors demonstrated significant ($P = .008$) increases in COX-2 expression in the epithelial component of prostate cancer tissue compared to normal or BPH tissue. They also noted marked differences in the immunohistochemical staining patterns as well. A strong correlation between COX-2 expression ($P < .001$) and Gleason histologic grading was found. Similar results were demonstrated by Western blotting.

The authors demonstrated significant (P = .008) increases in COX-2 expression in the epithelial component of prostate cancer tissue compared to normal or BPH tissue.

This study investigated the overexpression of COX-2 in human prostate cancer tissue and demonstrated a marked and significant difference between prostate cancer and BPH.

This important study and others like it have prompted both the National Cancer Institute and several pharmaceutical companies to initiate prospective, randomized, double-blind, placebo-controlled studies investigating the use of COX-2 inhibitors for both chemoprevention and treatment of prostate cancer. These randomized, controlled trials will address the issue of efficacy of these medications for these purposes and should provide useful clinical information within the next few years. This new class of medication may ultimately hold great promise as a weapon in our armamentarium in the fight against prostate cancer.

Pediatric Urology

Paternity and Hormone Levels

Reviewed by Ellen Shapiro, MD
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Over the past 5 years, we have gained a better understanding of fertility in cryptorchid patients as a result of the male fertility studies at the Children's Hospital of Pittsburgh. This report examines paternity and the hormone levels in males with unilateral undescended testis as it correlates to pretreatment testicular location.

It has been shown that bilateral cryptorchidism dramatically compromises fertility, while unilateral cryptorchidism decreases fertility to a level that is almost similar to controls. Infertility has been defined as a "lack of conception after more than 12 months of attempts to initiate a pregnancy." Therefore, unilateral cryptorchidism results in infertility in 10.5% of patients as compared with 5.4% in controls. In this select group of previously unilateral cryptorchid patients, there were significantly higher follicle-stimulating hormone (FSH) levels and lower sperm counts relative to controls. A risk for unsuccessful paternity includes increased FSH, decreased sperm density, varicocele, partner fertility problems, and a parenchymal suture placed through the testis at orchiopexy. These investigators have not identified an association between patient age at orchidopexy and successful paternity, although they did observe that inhibin-B levels were higher and FSH was lower when orchidopexy was performed before 2 years of age.

It has been shown that bilateral cryptorchidism dramatically compromises fertility, while unilateral cryptorchidism decreases fertility to a level that is almost similar to controls.

Paternity and Hormone Levels after Unilateral Cryptorchidism: Association with Pretreatment Testicular Location

Lee PA, Bellinger MT

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In study participants, the location of the testis was intra-abdominal in 11.3%, at the internal inguinal ring in 10%, intracanalicular in 41%, and at the external ring in 23.4%. The testis was ectopic or in the superficial pouch in 11.6%, and just above the scrotum in 2.8%. Paternity was achieved in 90% (288/320), while the remaining 32 were unsuccessful after at least 12 months. Paternity was somewhat lower for subjects whose testes were intra-abdominal (83.3%) versus those located at the internal inguinal ring (100%); however, this difference was not statistically significant. There was also no statistical difference between fertility rates in relation to the age at orchidopexy and pretreatment position. Although the previously unilateral cryptorchid patients had a 90% fertility rate, 24.9% needed more than 12 months to achieve conception, and testicular

location was not a factor. There was also no difference when a testis was atrophic at the time of surgery. Interestingly, on physical examination in adulthood, the combined testicular volumes in these patients were within the normal adult range. In his editorial comment, Dr. Douglas Husmann theorized that testicular compensatory growth occurs in adolescence and normalizes total testicular size and fertility rates. There were also no differences in sperm count, testosterone level, free testosterone level, and FSH level for testes in various locations. The mean sperm count was lower in infertile men. This study provides important information for physicians caring for children with undescended testes because parents often have many concerns about future fertility in the cryptorchid child.

Comparative Assessment of Pediatric Testicular Volume: Orchidometer Versus Ultrasound

Diamond DA, Paltiel HJ, DiCanzio J, Zurakowski D, Bauer SB, Atala A, Ephraim PL, Grant R, Retik AB.

J Urol. 164:1111-1114, 2000

The indication for varicocelectomy is based upon a 20%-25% testicular volume differential.[1] Therefore, it is imperative to be able to accurately compare initial and subsequent testicular volume differential in a patient with a varicocele. Diamond et al studied 65 males, ages 7-24 years, using two types of orchidometers and scrotal ultrasound. Almost all of the patients studied had a varicocele. The objective of their study was to determine the correlation of orchidometer measurements with ultrasound and the sensitivity and specificity of orchidometer and ultrasound in determining defined volume differentials between testes of 10%, 15%, 20% and 25%. The Prader orchidometer consists of 12 solid ellipses of various sizes (1-25 cc) while the Rochester orchidometer is a series of flat cut out elliptical rings (1-30 cc) which can be placed directly over the testis to its midportion. Scrotal ultrasound has also been very useful in assessing testicular measurements and volume.[2] Ultrasound was performed by scanning in an axial and longitudinal plane. The largest measurements for each dimension were recorded and the testicular volume was calculated using the formula for a prolate ellipsoid (length×width×thickness 0.52). The absolute testicular volume asymmetry was determined using the left testis volume minus the right testis volume. The relative volume differential was calculated using the formula unaffected testicular volume–affected testicular volume/unaffected testicular volume. The sensitivity (percent of true positives) and the specificity (percent of true negatives) of the orchidometers to detect volume differentials accurately between testes of 10%, 20%, and 25% was examined. They utilized ultrasound measurements as the gold standard. There was a linear relationship between the measurements of absolute testicular volume using either the Prader and Rochester orchidometers versus ultrasound. Although the measurements correlated well with ultrasound, the orchidometric measurements overestimated testicular volume by a mean of 6 ccs. When a comparison was made between the capability of the orchidometers and ultrasound to distinguish a volume differential, they found that for each of the volume differentials studied, the sensitivity of the Prader and Rochester orchidometers was <50%. This would mean that if a volume differential of 10%, 15%, 20% and 25% existed, this differential would not be detected by orchidometry. Therefore, ultrasound is recommended for detecting testicular volume differentials, especially in patients with varicoceles. Although the orchidometers are not useful for this purpose, they are a valuable tool in serial examinations of an individual testis. The authors conclude that annual ultrasound of testicular volume should be assessed in patients who are being followed for a varicocele.

Scrotal ultrasound has also been very useful in assessing testicular measurements and volume.

Comment: This is an important study by Diamond and his colleagues since there have been no studies comparing orchidometer to ultrasound in the assessment of volume differentials. This paper was presented at the American Academy of Pediatrics Section on Urology, October, 1999. In the discussion that followed the presentation of the paper, the authors note that they are performing an animal study to assess whether ultrasound is indeed the gold standard.[3] ■

References

1. Sayfan J, Siplovich L, Koltun L, et al. Varicocele treatment in pubertal boys prevents testicular growth arrest. *J Urol.* 1997;157;1456-1457.
2. Rivkees SA, Hall DA, Boepple PA, et al. Accuracy and reproducibility of clinical measures of testicular volume. *J Pediatr.* 1987;110:914-917.
3. Paltiel H J, Atala A, DiCanzio J, et al. Assessment of testicular volume: comparison of orchidometer and ultrasound measurements in dogs. May 2000; Presented at Conference of European Society of Pediatric Radiology, Lisbon, Portugal.